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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,530	03/29/2005	Teresa Karjala	62144B	4556

109 7590 07/31/2009

The Dow Chemical Company
Intellectual Property Section
P.O. Box 1967
Midland, MI 48641-1967

EXAMINER	
MCCAIG, BRIAN A	

ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
07/31/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/529,530	KARJALA ET AL.	
	Examiner	Art Unit	
	BRIAN MCCAIG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 14, 2009 has been entered.

2. Amendments to claims 1, 6-7, 13, and 18-19 are noted.

Response to Amendment

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-5, 7-17, and 19-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rossi et al et al (US 5811379) alone or, alternatively, as evidenced by Tsutsui et al et al (US 470449).**

6. With respect to claims 1-5, 7-11, 13-17, and 19-23, Rossi et al et al discloses a homogenous liquid/gel-like low molecular weight ethylene/α-olefin polymer, which acts as a pour point reducing additive [column 31, line 63-column 32, line 1], wherein the α-olefin is comprised of ethylenically unsaturated monomers including C_3-C_{20} α-olefins [column 12, lines 40-59], specifically, ethylene, 1-propene, 1-butene, 1-hexene, and 1-octene having a

number average molecular weight (Mn) less than 9,000 [column 3, lines 35-50], a total cystallinity less than 2% [column 19, lines 64-65], and a comonomer incorporation of greater than 50 mol % [column 16, lines 12-34]. All property characteristics as instantly claimed are therefore considered inherent to Rossi et al.

7. Rossi et al does not appear to explicitly disclose the constrained geometry catalyst. However, Rossi et al discloses a catalyst suitable for the polymerization process discussed therein, which is taught by Stevens et al (US 5132380 [see column 9, lines 13-24 of Rossi et al], wherein the catalyst may be (tert-butylamido) (tetramethyl-η^5-cyclopentadienyl)-1,2-ethanediylzirconium dichloride[see column 4, lines 15-20 in Stevens et al, specifically, and column 3, line 27 to column 4, line 30 in general], for example, which renders obvious the constrained geometry catalyst of the instant application. Therefore, the required catalyst is inherent to the disclosure of Rossi et al, or, alternatively, would have been obvious to one of ordinary skill in the art. Additionally, since the reactants, catalyst, and reaction conditions of Rossi et al are similar to those of the instant application, it is expected that the requirement that the resulting ethylene/α-olefin polymer be substantially linear is inherent to the reference.

8. Alternatively, since Rossi et al discloses that most of the molecular weight of the polymer should be contained in the backbone of polymers used in fuel applications [column 20, lines 26-37], it would have been obvious to one of ordinary skill in the art to have the ethylene/α-olefin polymer be substantially linear.

9. Rossi et al does not explicitly disclose the pour point of the ethylene/α-olefin polymers but does disclose their beneficial effects on pour points of mixtures including the said polymers. However, it is well known to one of ordinary skill in the art that low-molecular weight ethylene/α-olefin polymers such as those of Rossi et al have a pour point less than 0° C as evidenced by Tsutsui et al [see, e.g., table 3, examples 6 & 7].

10. With respect to claims 12 and 24, Rossi et al discloses [column 31, lines 14-16] a synthetic oil for use as a lubricant oil comprising the liquid/gel-like low molecular weight ethylene/α-olefin polymer in which the oil has a kinematic viscosity of 2-40 centistokes at 100° C.

11. **Claims 6 and 18 remain rejected under 35 U.S.C. 102(b) as being anticipated by Rossi et al (US 5811379) taken singly or as further evidenced by Tsutsui et al (US 4704491) and Wittcoff et al in *Industrial Organic Chemicals* (2nd edition, 2004, 662 pgs, Wiley).**

12. Rossi et al discloses a process comprising reacting ethylene and at least one ethylenically unsaturated monomer at a reaction temperature of at least 80° C (column 17, lines 17-24] in the absence of hydrogen [the process of Rossi et al requires dilute monomers in which the diluent is a hydrocarbon inert absent hydrogen; see column12, line 20-column 18, line 58], and in the presence of a single site catalyst [column 5, lines 32-34, which describes a late-transition-metal catalyst such as that illustrated by structure A, column 35, which is a single site catalyst as evidenced by Wittcoff et al, page 498-499] to form a homogenous liquid low molecular weight ethylene/α-olefin polymer having a number average molecular weight (M_n) less than 25,000 [column 3, lines 35-50], a total cystallinity less than 10% [column 19, lines 64-65], and a co-monomer incorporation of greater than 15 mol % [column 16, lines 12-34].

13. Rossi et al does not explicitly disclose the pour point of the ethylene/α-olefin polymers but does disclose their beneficial effects on pour points of mixtures including the said polymers. However, it is well known to one of ordinary skill in the art that low-molecular weight ethylene/α-olefin polymers such as those of Rossi et al have a pour point less than 50° C as evidenced by Tsutsui et al [see, e.g., table 3, examples 6 & 7].

Response to Arguments

14. The applicant has argued that the catalyst system of Rossi et al would not produce the required homogenously branched substantially linear ethylene/a-olefin polymer of the instant application.

15. The applicant's argument is not persuasive because Rossi et al uses a similar feed, reaction conditions, and catalysts as the instant application. Furthermore, the disclosure of Rossi et al does not preclude a polymer containing long branches. Rossi et al discloses that most of the molecular weight of the polymer should be in the backbone and that 80% of the branches should be C_1-C_4. The remaining branches may be long chains. The instant

application discloses (but does not claim) a polymer having 0.1 to 3 long branches per 1000 carbon atoms. Therefore, it seems as though the most of the molecular weight of the polymer of the instant application is also contained in the backbone. There does not appear to be a substantial difference between the teaching of Rossi et al and the disclosure of the instant application.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN MCCAIG whose telephone number is (571) 270-5548. The examiner can normally be reached on M-F 8-430.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BAM
7/27/2009

/ROBERT J. HILL, JR/
Primary Examiner, Art Unit 1797